Module Definition Form (MDF)

Module code: MOD002803	**Version:** 11 **Date Amended:** 06/Dec/2023

1. Module Title
Metabolism and its Control (BMS)

2a. Module Leader
Clett Erridge

2b. School
School of Life Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
5

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions

Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	Biomedical Science, Bioscience, Bioinformatics degree courses, Life Sciences framework		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

Metabolism is the sum of all of the complex reactions occurring in the cell. Building on knowledge gained in your first year, you will further examine a range of metabolic pathways with a view to gaining a detailed understanding of the overall strategy of metabolism and the internal logic of key metabolic pathways. The effects of drugs and inhibitors and the role of allosteric enzymes in the feedback control of metabolism will also be discussed. We look in detail at the organisation of the genome and how genetic material is transcribed and translated. This then leads to an understanding of the significance of inborn errors of metabolism and the effects of therapeutic drugs on individual reactions of metabolism. Finally, we look in detail at cellular specialisation and the structure and biological functions of the major cellular organelles, including intracellular trafficking and signalling.

You will also develop a number of transferable skills including practical (laboratory) techniques and graduate skills. You will study enzyme kinetics and the effects of inhibitors, measure blood glucose levels and investigate regulation of gene expression in bacteria in laboratory session. The skills obtained in these practicals are crucial for those considering careers as biomedical scientists, laboratory researchers or workers in the pharmaceutical industry. You will also obtain valuable experience in data collection, handling and interpretation.

6b. Outline Content

- Biochemistry of processes which support life, including cellular metabolism and its control
    - Energy conservation in cells and the calculation of energy conserved during the breakdown of carbohydrates and fatty acids
    - Effects of drugs and inhibitors
    - Role of feedback inhibition and feed-forward activation in controlling metabolic pathways -Inborn errors of metabolism, their effects, diagnosis, monitoring and treatments
- Organisation of the genetic material in eukaryotic cells and the processes of transcription and translation
- Cellular specialisation and the structure and biological functions of the major cellular organelles
- Intracellular trafficking and hormonal signalling

6c. Key Texts/Literature

The reading list to support this module is available at: https://readinglists.aru.ac.uk/

6d. Specialist Learning Resources
Access to biochemistry laboratories and appropriate equipment. Technical support

7. Learning Outcomes (threshold standards)		
No.	**Type**	**On successful completion of this module the student will be expected to be able to:**
1	Knowledge and Understanding	Apply an understanding of the key metabolic pathways found in living cells to explain the causes of common metabolic disorders.
2	Knowledge and Understanding	Explain the roles of allosteric enzymes, drugs and inhibitors in the regulation of metabolic pathways, and interpret the results of experimental investigation.
3	Knowledge and Understanding	Compare and contrast the structure and function of major organelles, together with the organisation of the genetic material in eukaryotic cells and the processes of transcription and translation.
4	Intellectual, practical, affective and transferrable skills	Perform, collect, analyse and present experimental data in a variety of formats, and interpret the results of assays of biological samples to yield diagnostic conclusions.

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2026/7	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	**Hours**	**Learning Outcomes**	**Details of Duration, frequency and other comments**
Lectures	24	1-3	8 x 3hrs lectures/active learning
Other teacher managed learning	12	4	3 x 3 hour Practicals + 3 hrs revision
Student managed learning	114	1-4	Background reading, online activities, preparation for lectures and practicals, and completion of assessments
TOTAL:	150		

9. Assessment for the above Module Occurrence

The assessment for some modules includes a presentation (see below for details on how this particular module is assessed). We recognise that presenting, especially to a large group, can cause significant anxiety or distress for some students. If this may affect you, please contact your Module Leader or the Disability and Neurodiversity Service as early as possible. We will work with you to consider appropriate reasonable adjustments. Depending on your individual needs, these might include, for example, presenting to a smaller group or presenting only to a member of academic staff.

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	1-4	50 (%)	Fine Grade	40 (%)
In-class test 1 hour 30 minutes (40% Qualifying Mark as stipulated by the IBMS)					

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Examination Cambridge	1-3	50 (%)	Fine Grade	40 (%)
Examination 1 hour 30 minutes (40% Qualifying Mark as stipulated by the IBMS)					

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:
(a) achieve the qualifying mark for each element of fine graded assessment as specified above
(b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]